

# X Series®

## Technical Specifications:



### Because Medics Carry More These Days

- At less than 12 pounds/6 kilograms, the X Series is up to half the size and weight of other full-featured devices.
- Its large, bright screen allows for simultaneous viewing of four traces, all 12 ECG leads, or static and dynamic 12-lead views on a “split screen.”
- The latest, most advanced and most complete monitoring capabilities, including gold standard Masimo® full rainbow® SET and Welch Allyn’s Rapid NIBP technologies can be added.
- Trauma-specific parameters deliver insight on occult hemorrhage (SpHb™), fluid responsiveness (PVI™), and oxygenation status (SpOC™).

### Because CPR Is a Focus for Cardiac Arrest

- CPR Dashboard™ provides real-time numeric depth and rate values and has a CPR timer that switches to an idle timer when compressions are stopped. The release indicator and the perfusion performance indicator (PPI) also help maximize CPR performance.
- See-Thru CPR® (unique to ZOLL®) helps minimize the duration of interruptions by filtering out artifact, allowing you to see organized underlying rhythms during CPR.

### Simplify Charting with Advanced Communication

- The X Series is the first monitor/defibrillator with integrated WiFi. Bluetooth® and USB cellular modem capabilities are standard as well.
- With the push of a button, medics can now directly send X Series files to your system. With RescueNet CaseReview, access to case files is as fast as opening your web browser.
- The X Series acquires, stores, and transmits 12-leads to ZOLL’s easy-to-use and economical RescueNet 12-Lead and RescueNet MedGate 12-Lead management systems.

## General

**Weight:** 11.7 lbs. (5.3 kg) with battery and paper

**Dimensions:** 8.9 in (22.6 cm) x 10.4 in (26.4 cm) x 7.9 in (20.1 cm)

**Enclosure Protection:** Solid Foreign Object: IEC 60529, IP5X

Water: IEC 60529, IPX5

**Operating Temperature:** 0 to 50°C

**Humidity:** 15 to 95% RH (non-condensing)

**Vibration:** MIL-STD 810G, Method 514.6, 4.4.2 Procedure II

EN ISO 9919 (per IEC 60068-2.64)

EN 1789 for ambulance. RTCA/DO-160G (multiple helicopter frequencies)

**Shock:** IEC 60068-2-27, 100g, 6 ms half sine

**Drop:** EN 1789, 30-inch functional drop, IEC 60601-1, tested at 2 meters

**Altitude:** -170 m to 4572 m (-557 feet to 15,000 feet)

## Monitor/Display

**Size:** 6.5 in (16.56 cm) diagonal

**Input:** 3-lead, 5-lead, or 12-lead patient cable, paddles, or multifunction electrodes

**Type:** Color LCD, 640 x 480 pixels, 800 MCD

**Sweep Speed:** 25 mm/sec or 50 mm/sec (user selectable)

**Lead Selections:** Paddles (Pads), I, II, III, AVR, AVL, AVF, V1-6

**Frequency Response:**

(user selectable)

0.67 – 20 Hz Limited mode

0.67 – 40 Hz Monitor mode

0.25 – 40 Hz Filtered diagnostic mode

0.05 – 150 Hz Diagnostic mode

## Defibrillator

**Waveform:** Rectilinear Biphasic™

**Energy Selections:** 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 20, 30, 50, 70, 85, 100, 120, 150, 200 joules

**Energy Display:** Display indicates selected and delivered energy

**Charge Time:** Less than 7 seconds with a new, fully charged battery

**Charge Controls:** Front panel and on apex paddle

**Pads/Paddles:** Hands-free pads and external adult and pediatric paddles. Adult paddles slide off to expose pediatric paddles.

**Synchronized Mode:** Synchronizes defibrillator pulse to patient's R wave.

"SYNC" message displayed on monitor and markers shown on both monitor and recorded ECG. Meets Clause 104 of AAMI DF80.

## Patient Modes

**User Selectable:** Adult, Pediatric, Neonate.

Automatically sets configurable defaults for alarm limits, defibrillation energy, and NIBP settings.

## Trends (on-screen)

Tabular numeric format

All parameters trended/viewable

**Trend Intervals:** 1, 5, 10, 15, 30, 60 minutes

**Duration:** 24 hours at 1-minute intervals

**Snapshots:** Minimum of 32 (12 seconds of pre- and post-button press)

Quick-access trend display via quick-access button

## Memory Capacity

A combination of 24 hours of trends at 1-minute intervals, 1000 time-stamped events, and 32 snapshots, including monitor, defibrillator, pacer, and treatment snapshots

## Pacer

**Type:** External transcutaneous pacing

**Pulse Types:** Rectilinear, constant current

**Pulse Width:** 40 ms ± 2 ms

**Pacer Rate:** 30 – 180 bpm ± 1.5%

**Output Current:** 0 – 140 mA ± 5% or 5 mA, whichever is greater

**Modes:** Demand and Fixed

## CPR

### CPR Feedback Technology

See-Thru CPR®: Artifact filtering

Real CPR Help®: Real-time depth and rate feedback

CPR Dashboard™: Numeric readout of depth and rate, release indicator, perfusion performance indicator (PPI)

## ECG

**Cable Detection:** Automatic 3-, 5-, 12-lead ECG

**Input:** 3-lead cable, 5-lead cable,

12-lead cable, paddles, therapy cable

**Leads:** I, II, III, AVR, AVL, AVF, V1 – V6

**Heart Rate Range:** 30 – 300 bpm

**Heart Rate Accuracy:** ± 3 bpm or 3%

**Pacer Detection and Display**

**ECG Sizes:** 0.125, 0.25, 0.5, 1, 2, 4 cm/mV, and auto-ranging

**Sweep Speed:** 25 mm/sec, 50 mm/sec

## Masimo® SET SpO<sub>2</sub>

**Saturation Range:** 1 – 100%

**Saturation Accuracy:**

Oxygen saturation during no-motion conditions:

Adults, Pediatrics: 70 – 100%, ± 2 digits

0 – 69%, unspecified

Neonates: 70 – 100%, ± 3 digits

0 – 69%, unspecified

Oxygen saturation during motion conditions

Adults, Pediatrics: 70 – 100%, ± 3 digits

0 – 69%, unspecified

Neonates: 70 – 100%, ± 3 digits

0 – 69%, unspecified

Oxygen saturation during low-perfusion conditions:

Adults, Pediatrics: 70 – 100%, ± 2 digits

0 – 69%, unspecified

Neonates: 70 – 100%, ± 3 digits

0 – 69%, unspecified

**Pulse Rate Range:** 25 – 240 bpm

Pulse rate during no-motion conditions:

Adults, Pediatrics,

Neonates: 25 – 240 ± 3 digits

Pulse rate during motion conditions

Adults, Pediatrics,

Neonates: 25 – 240 ± 5 digits

## SpO<sub>2</sub> Average time setting:

4, 8 (default), 16 seconds

## Masimo rainbow® SET SpCO®

Range: 0 – 99%

Accuracy: 1 – 40% ± 3 digits

## Masimo rainbow® SET SpMet®

Range: 0 – 99%

Accuracy: 1 – 15% ± 1 digits

## Masimo rainbow® SET SpHb®

Measurement Range: 0 – 25 g/dL

Accuracy (Adults/Infants/Pediatrics): 8 – 17 g/dL +/- 1 g/dL

Resolution (SpHb g/dL): 0.1 g/dL

## Masimo rainbow® SET SpOC™

Measurement Range: 0 – 35 mL of O<sub>2</sub>/dL of blood

Resolution: 0.1 mL/dL

## Masimo Perfusion Index (PI)

Measurement Range: 0.02 – 20%

Resolution: 0.1%

## Masimo Pleth Variability Index (PVI®)

Measurement Range: 0 – 100%

Resolution: 1%

## Non-Invasive Blood Pressure (NIBP)

Smartcuf® and Sure BP® NIBP technology

**Measurement Intervals:** Automatic 1-, 2-, 3-,

5-, 10-, 15-, 30-, 60-minute, and manual

quick-action NIBP Start/Stop button

**TurboCuf:** 5 min of repeated NIBP readings

**Display:** Systolic, diastolic, mean. Viewable on-screen with large numerics.

## Cuff Overpressure Protection

**Typical Measurement Time:**

30 – 45 sec (on deflation)

15 – 30 sec – Sure BP (on inflation)

**Standard Cuff Sizes:** Neonate #1 – #5, Infant, Small Child, Small Adult, Adult Long, Large Adult, Thigh

## Default Cuff Inflation Pressure:

Adults: 160 mmHg

Pediatrics: 120 mmHg

Neonates: 90 mmHg

Pressure Measurement Range:

Systolic: 20 – 260 mmHg

Diastolic: 10 – 220 mmHg

Mean: 13 – 230 mmHg

Maximum Cuff Inflation Pressure:

Adults: 270 mmHg

Pediatrics: 170 mmHg

Neonates: 130 mmHg

## Microstream® etCO<sub>2</sub>

**Range:**

0 – 150 mmHg

**Accuracy:**

0 – 38: ± 2 mmHg

39 – 150: ± 5% + .08% mmHg >38

**Respiration Range:** 0 – 149 breaths per minute

**Respiration Rate Accuracy:**

0 – 70 bpm ± 1 bpm

71 – 120 bpm ± 2 bpm

121 – 149 bpm ± 3 bpm

**Flow rate:** 50 ml/min -7.5 + 15 ml/min

**Typical response time:** 2.9 seconds

**Maximum response time:** 3.9 seconds

## Impedance Pneumography

**Displayed Data:** Numeric breath rate,

Impedance waveform

**Breath Rate Range:** Adult, Pediatric:

2 to 150 breaths/minute. Neonates: 3 to 150 breaths/minute.

**Breath Rate Accuracy:** 2% or ± 2, whichever is greater

**Displayed Breath Rate:** Average of last 10 breath-to-breath rates

**Leads:** Lead I (RA – LA), Lead II (RA – LL)

**Sweep Speed:** 3.13, 6.25, 12.5 mm/sec

**Alarm Settings:** High, low, and no breath rate alarm

## Invasive Pressure

### Three Channels

**Pressure Range:** -30 – 300 mmHg

**Pulse Rate Measurement Range:**

25 – 250 bpm

**Formats:** S/D, S/D (M), (M) user selectable

**User-Selectable Labels:** P1, P2, P3, ABP, AO, ART, CVP, BAP, FAP, LAP, PAP, RAP, UAP, UVP, ICP

**Transducer Requirements:**

5M µV/V/mmHg

**Zero Adjustment:** ± 200 mmHg

**Numeric Pressure Accuracy:** ± 2 mmHg or 2% reading, whichever is greater of reading, plus transducer error

**Transducer Connector:** Standard 6-pin MS connector

## Temperature

Two YSI 400/700 series-compatible channels

**Range:** 0 – 50°C (32 – 122°F)

**Units:** °C or °F

**Display:** T1, T2, and Delta temp

**Accuracy:** ± 0.1°C (± 0.06°F) from 10 – 50°C (50 – 122°F) ± 0.2°C (± 0.11°F) from 0 – 10°C (32 – 50°F)

## Printer

**Type:** High-resolution thermal array

**Annotation:** Time, date, ECG lead, ECG gain, heart rate, defibrillation, and pacing parameters and treatment summary events

**Paper Width:** 80 mm

**Paper Speed:** 25 mm/sec, 50 mm/sec

**Delay:** 6 seconds

**Frequency Response:** Automatically set to monitor's frequency response

**Record Modes:** Manual and automatic (user configurable)

**Print Option** Single waveform or a combination up to 3, on alarm, snapshots, treatment summary report, and trend summary

## Battery

**Type:** Rechargeable lithium-ion, 11.1 Vdc, 6.6 Ah, 73 Wh

**Capacity:** With a new, fully charged battery operating at room temperature: At least 6 hours of continuous monitoring of ECG, SpO<sub>2</sub>, CO<sub>2</sub>, 3 invasive pressure channels, and 2 channels of temperature, with NIBP measurements every 15 minutes and 10 200-joule shocks. 300 shocks at 200 joules with fully charged new battery at room temperature. At least 3.5 hours pacing, with ECG, SpO<sub>2</sub>, CO<sub>2</sub>, three invasive pressures, temperature, NIBP every 15 minutes and pacing at 180 ppm, and 140 mA.

**AC Power Adapter:** 100 – 240 VAC 50, 60 Hz, 2A 100 – 115 VAC 400Hz, 2A

Specifications subject to change without notice.

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